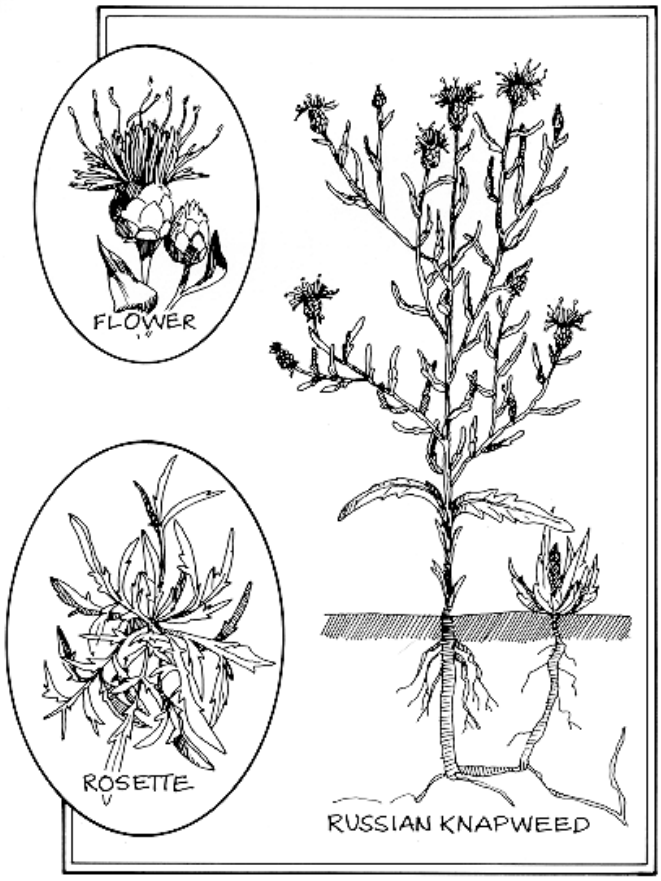
RUSSIAN KNAPWEED
Acroptilon repens

Life History/Identification:



Russian knapweed is a deep-rooted perennial non-native to the USA that reproduces from seed and vegetative root buds. Shoots, or stems, are 18 to 36 inches tall and have many branches. The stems are thin and stiff, and have a dense covering of gray hairs. The lower leaves are 2 to 4 inches long and are deeply lobed; upper leaves are smaller, generally with smooth margins, but can be slightly lobed. Russian knapweed has urn-shaped flower heads, which are solitary and occur on the shoot tips. Generally ¼ to ½ inches in diameter, the flowers can be pink, lavender, or white. The extensive root system is easily recognizable by its black or dark brown color and alternately arranged root scales with adventitious buds. These buds develop into new shoots, allowing for the colonization of large areas quickly. Russian knapweed is also characterized by its ability to form dense single-species stands over time due to allelopathy. The plant produces biochemicals that inhibit the germination and growth of other plants in the soils around their roots, thereby reducing competition. This weed emerges in early spring, bolts in May to June, and flowers through the summer and into autumn. Although seed is viable for up to three years in the soil, its primary method of reproduction is from vegetative propagation. Once established, the roots of this weed can spread up to 12 square yards in two growing seasons.

Northern Arizona Localities:

Russian knapweed can survive in most any soil and is known to live in both moist and arid conditions, arid being more common. This ability to tolerate and to thrive in arid conditions creates a serious problem in the southwestern United States. Although California, Idaho, Montana, Oregon, and Washington are the worst infected states, there have been at least 10 counties in Arizona that have reported Russian knapweed infestations since 1985. In the general Flagstaff area, there is a four-acre population of this weed on the Snowbowl Road parking lot, off of Highway 180. The Blue Ridge District of Coconino National Forest also reports having Russian knapweed on the Highway system.

Origin & Impacts:

Russian knapweed is native to southern Ukraine, southeast Russia, Iran, Kazakhstan, and Mongolia. In the late 1800's, it was introduced to North America via shipments of impure alfalfa and possibly sugarbeet seed. Today, after initial infestation, movement between sites mainly occurs through the distribution of impure hay and through the attachment of seeds or root pieces on to machinery and vehicles. Various studies have also shown that entire plants can move downstream in river systems during the event of a flood. These plants then become established in the disturbed soils of the riverbank and form new, isolated infestations. Livestock and wild grazing animals will not eat Russian knapweed because of its extremely bitter taste. The presence of this weed in hay decreases feeding value and lowers the market price, as it is toxic to horses. Plants consumed in fresh or dry feed can cause the irreversible neurological chewing disease. Disturbed sites within cities and towns can

quickly become infested because vacant lots, curbsides, alleys, and waste areas will support large populations of this aggressive plant. Shoots from the sprawling root system can go so far as to deteriorate road surfaces and cause structural damage.

Control:

Like other creeping perennials, the key to Russian knapweed control is to stress the weed and cause it to expend nutrient stores in its root system. An integrated management plan should be developed that places continual stress on the weed. Currently, the best management plan includes cultural control combined with mechanical and/or chemical control techniques.

Cultural Control:

Sowing desirable plant species after the weed is suppressed by various control methods is necessary. Revegetation research has shown that streambank wheatgrass, thickspike, wheatgrass, crested wheatgrass, and Russian wildrye were able to establish in a Russian knapweed infestation once the weed was stressed with herbicides. If the Russian knapweed is not too old and grasses are still present, stimulating grass growth by irrigation should increase grass competition with knapweed and keep it under continual stress.

Mechanical Control:

Due to the deep placement of the roots, cultivation does not guarantee control of Russian knapweed. Mowing has proven to be somewhat ineffective as well. While mowings, 8 weeks apart, suppressed Russian knapweed for that year, the weed recovered vigorously the subsequent season. Perennial grasses established in the mowing treatments but much less than in herbicide treatments.

Chemical Control *(Noted here are chemical control techniques that have been used in other areas. Always check with weed specialists or chemical suppliers before treatment to ensure correct dosage and application. Mention of these products does not imply endorsement by the USDA Forest Service, Northern Arizona Weed Council or The Nature Conservancy.)*:

Timing is very critical in Russian Knapweed control. Research in Colorado and Montana concluded that herbicide should be applied in late fall when the plant is actively transporting nutrients into the root system, not in spring/summer during the active growth period.

1) Russian knapweed is controlled with Tordon 22K™ (chemical name: **picloram**) at 1 to 2 quarts per acre. Tordon™ may be broadcast sprayed up to a quart per acre but one can spot spray at rates up to 4 quarts per acre. Tordon™ plus 2,4-D (1 to 1.5 pints + 1 quart per acre) also will control Russian knapweed. The Tordon™ label prohibits seeding perennial grasses the same year this herbicide is applied.
2) Telar™ (chemical name: **chlorsulfuron**) is a non-crop herbicide that controls Russian knapweed, but application timing is critical. Apply 1 ounce per acre when the weed is in the post-bloom stage. Earlier applications do not control the weed effectively.

Biological Control *(No exotic species should be introduced into an ecosystem without extensive research into the long-range effects. Mention of the species below does not imply appropriateness for use in Northern Arizona.)*:

In its native range, numerous specialized organisms attack Russian knapweed. After the determination of host specificity, a gall forming nematode was introduced into the United States in 1984 in Washington. It is now established in Washington as well as in Colorado, Montana, Oregon, Utah, and Wyoming showing limited success. This nematode forms galls on the stems, leaves, and root crown of both Russian knapweed and diffuse knapweed.

Note: No single control method, or any one-year treatment program, will ever achieve effective control of an area contaminated with Russian knapweed. The sprawling perennial roots, ability to crowd out competitors, fast rate of spread, and fast growth of this plant require long-term cooperative integrated management programs and planning to prevent, contain, and reduce Russian knapweed infestations.

Moser, L; D. Crisp. San Francisco Peaks Weed Management Area fact sheet on Acroptilon repens. Coconino National Forest.